

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Currently amended) A cellular chip platform, comprising a charge coupled detector array device (CCD), a thin protective film over the CCD, a thin patterned film comprising diamond-like carbon is applied to the protective film to pattern cellular growth, wherein sustained cellular growth only occurs over the thin patterned film and wherein such sustained growth is more than two weeks, and an insulator material for insulating CCD electronics from a cellular culture.
2. (Previously presented) The cell potential measurement apparatus of claim 14, wherein the detectors on the CCD are about 6 to 15 microns square.
3. (Previously presented) The cell potential measurement apparatus of claim 2, wherein the protective film and the patterned film are deposited by plasma deposition.
4. (Previously presented) The cell potential measurement apparatus of claim 3, wherein said protective film is comprised of a single, composite or multiply-layered thin film that consists primarily of combinations of different oxides and/or nitrides.
5. (Previously presented) The cell potential measurement apparatus of claim 4, wherein said protective film is about 100 to 1000 Angstroms in thickness.
6. (Cancelled).
7. (Previously presented) The cell potential measurement apparatus of claim 6, wherein the patterned film is about 100 to 300 Angstroms in thickness.
8. (Previously presented) The cell potential measurement apparatus of claim 7, wherein the insulator material is comprised of any wire insulator, sealant, bonding agent, epoxy, any metal, wax, parylene, synthetic rubber or elastomer, a polymer composition having no porosity, glass, ceramic or porcelain.

9. (Previously presented) The cell monitoring device of claim 22, further comprising a cell culturing layer above the patterned film.

10. (Previously presented) The cell monitoring device of claim 9, wherein said cell culturing layer is selected from the group consisting of collagen, fibronectin, laminin, extracellular basement membrane proteins and combinations thereof.

11. (Previously presented) The cell monitoring device of claim 10, wherein the cell culturing layer is fibronectin.

12. (Previously presented) The cell monitoring device of claim 22, further comprising a means to maintain an environment for culture of the cells on said platform to enable long-term measurement and growth, wherein said environmental maintenance means comprising a temperature adjustment means for maintaining a constant temperature, a means for circulating a culture solution, a means for supplying a mixed gas of air and carbon dioxide, and a covering means to keep the cells enclosed on the platform.

13. (Previously presented) The cell monitoring device of claim 22, further comprising microelectrodes and conducting tracks deposited on the protective film by plasma deposition.

14. (Currently amended) A cell potential measurement apparatus comprising

- a) a cellular chip platform comprising a charge coupled detector device array (CCD), a thin protective film over the CCD, a thin patterned film comprising diamond-like carbon is to pattern cellular growth, and an insulator, wherein cellular growth only occurs over the thin patterned film and wherein such cellular growth is sustained for more than two weeks;
- b) an electrical connection means connected to the cellular chip platform;
- c) an illumination source;
- d) a stimulation signal supply means to be connected to the electrical connection means of the neuron chip platform for providing electrical stimulation to the cells; and

e) a signal or image processing means to be connected to the electrical connection means of the cellular chip platform for processing an output signal or image arising from electrical physiological activities of the cells.

15. (Previously presented) The cell potential measurement apparatus of claim 14, wherein the cellular chip platform is detachable from the electrical connection means, the stimulation signal supply means and the signal or image processing means.

16. (Original) The cell potential measurement apparatus of claim 15, further comprising microelectrodes and conducting tracks deposited onto the protective film by plasma deposition.

17. (Currently amended) The cell potential measurement apparatus of claim ~~16~~¹⁴, further comprising a cell culturing layer above the patterned film.

18. (Previously presented) The cell potential measurement apparatus of claim 17, wherein said cell culturing layer is selected from the group consisting of collagen, laminin, fibronectin, extracellular basement membrane proteins and combinations thereof.

19. (Previously presented) The cell potential measurement apparatus of claim 18, further comprising cells grown on the cell culturing layer.

20. (Previously presented) A method of detecting and monitoring live networks of cells comprising the steps of:

- a) providing a cell potential measurement apparatus of claim 14;
- b) adding a cell culturing layer and seeding said culturing layer with cells;
- c) allowing the cells to grow;
- d) providing electrical or environmental stimulation to the cells;
- e) detecting and recording the cellular response via the CCD;
- f) analyzing said cellular response using a signal or image processing means.

21. (Previously presented) The cellular potential measurement apparatus of claim 14, wherein the cells are cardiac cells.

22. (Previously presented) A cell monitoring device comprising:
 - a) a cellular chip platform comprising a charge coupled detector device array (CCD), a thin protective film over the CCD, a thin patterned film, and an insulator material for insulating CCD electronics;
 - b) an electrical connection means connected to the cellular chip platform; and
 - c) a signal or image processing means to be connected to the electrical connection means of the cellular chip platform for processing an output signal or image arising from electrical physiological activities of the cells.
23. (Previously presented) The cell monitoring device of claim 22, wherein the cellular chip platform is detachable from the electrical connection means, and the signal or image processing means.
24. (Previously presented) The cell monitoring device apparatus of claim 22, wherein the protective film comprises an impermeable and inert material.
25. (Previously presented) The cell monitoring device of claim 24, wherein the impermeable and inert material is comprised of combinations of different oxides and/or nitrides.
26. (Previously presented) The cell monitoring device of claim 22, wherein the insulator material is comprised of any wire insulator, sealant, bonding agent, epoxy, a metal, synthetic rubber or elastomer, a polymer composition, glass, ceramic or porcelain.
27. (Previously presented) The cell monitoring device of claim 26, wherein the insulator material is comprised of a polymer composition.
28. (Previously presented) The cell monitoring device of claim 9, further comprising cells grown on the cell culturing layer, wherein the cells grown are selected from the group consisting of cardiac, smooth muscle, striated muscle and neurons.
29. (Previously presented) The cell monitoring device of claim 28, wherein the cells are cardiac cells.

30. (Previously presented) The cell monitoring device of claim 22, further comprising an external illumination source.

31. (Previously presented) The cell monitoring device apparatus of claim 22, further comprising a stimulation signal supply means to be connected to the electrical connection means of the cellular chip platform.

32. (Previously presented) The cell monitoring device of claim 31, wherein the stimulation signal supply means to be connected to the electrical connection means of the cellular chip platform is a power supply.

33. (Previously presented) The cell monitoring device of claim 22, wherein the detectors on the CCD are about 6 to 15 microns square.

34. (Previously presented) The cell monitoring device of claim 22, wherein the patterned film is comprised of diamond-like carbon.

35. (Previously presented) The cellular chip platform of claim 1, wherein said patterned film is comprised of diamond-like carbon.

36. (Previously presented) The cellular chip platform of claim 1, further comprising a cell culturing layer above the patterned film.